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AUTHOR Fichten, Catherine S.; Barile, Maria; Asuncion, Jennison; Judd, Darlene; Alapin, Iris; Reid, Evelyn; Lavers, Jason; Genereux, Christian; Guimont, Jean-Pierre; Schipper, Fay

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ABSTRACT

This report discusses a study involving 37 Canadian college and university students with disabilities and 30 Disabled Student Services (DSS) personnel that explored the use of computers in postsecondary education. Students were enrolled in community and junior colleges, universities, and postsecondary distance education institutions. Results indicated: (1) about half of the student sample had 2 or more impairments, suggesting the need for adapted work stations which can accommodate the needs of students with various disabilities; (2) in spite of their smaller numbers, students who are blind had the largest array of technologies at their disposal; (3) voice input software and scanners were found to be used not only by students with learning disabilities, but also by those who have a variety of impairments involving mobility and use of hands and arms; (4) service providers were using the Internet as a means of getting information about what equipment and adaptations are out there for students, and students were primarily teaching themselves how to use the equipment; (5) smaller institutions were less likely to have specialized computer technologies for their students; and (6) about half of the students surveyed did not know that funding programs existed to help them to obtain needed equipment. (CR)

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A COMPARISON OF POSTSECONDARY STUDENTS WITH DISABILITIES AND SERVICE PROVIDERS: VIEWS ABOUT COMPUTER AND INFORMATION TECHNOLOGIES

Catherine S. Fichten
Maria Barile
Jennison Asuncion
Darlene Judd
Iris Alapin
Evelyn Reid
Jason Lavers
Christian Genereux
Jean-Pierre Guimont
Fay Schipper

ADAPTECH Project
Dawson College
SMBD Jewish General Hospital
Action des Femmes Handicapees de Montreal
Concordia University
National Educational Association Of Disabled Students (NEADS)
Universite du Quebec a Montreal
Mckay Center
ADAPTECH Project
Dawson College
3040 Sherbrooke St. West
Montreal, Quebec, Canada H3Z 1A4

E-Mail
Catherine Fichten: md71@musica.mcgill.ca
Maria Barile: mdb2@musica.mcgill.ca
Jennison Asuncion: j_asunc@alcor.concordia.ca
Darlene Judd: mdvt@musica.mcgill.ca
Iris Alapin: ialapin@securenet.net
Evelyn Reid: e-reid@dsuper.net
Jason Lavers: mclv@musica.mcgill.ca

Christian Genereux: genereux@cedep.net
Jean-Pierre Guimont: jpguimont@dawsoncollege.qc.ca
Fay Schipper: fay@total.net

Computer and information technologies have the potential both of enhancing the lives of students with disabilities in colleges and universities as well as of denying them equality of access to higher education. The objective of this study was to explore this issue by evaluating the views and opinions of both students with disabilities and of Disabled Student Services Office service providers concerning the use of computers in postsecondary education.

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METHOD

Sample Characteristics

Participants were 37 Canadian college and university students and 30 Disabled Student Services (DSS) personnel.

Students were enrolled in community and junior colleges, universities, and postsecondary distance education institutions in all 10 Canadian provinces and both territories. A minimum of 1 college and 1 university student per province was interviewed. Because neither the Yukon nor the Northwest territories have universities, only college students from the territories were interviewed. Where available, both English and French institutions were sampled.

Participants were recruited through the mailing list of a national consumer organization of students with disabilities [National Educational Association Of Disabled Students (NEADS)] and through campus Disabled Student Services (DSS) offices. Some of the student participants were recruited through recommendations made by members of our advisory board. Both computer users and non-users were interviewed.

Students had a variety of disabilities: learning disabilities, visual and hearing impairments, mobility and neuromuscular impairments as well as medical and psychiatric conditions. Approximately 1/2 of the students had 2 or more different impairments. 3 students did not use a computer, while the rest did.

30 Disabled Student Services (DSS) personnel were also interviewed. Sampling followed the procedure outlined for the student sample.

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Procedure and Measures

Structured interviews were conducted in the spring of 1998. When permission was granted (over 90% of participants), interviews were audiotaped. The two structured interview protocols are available in the EvNet Toolkit (http://evnetcanada.org)

Interviews with students were conducted either by telephone or via TTD. 17 groups of questions were posed. Interviews lasted between 20 minutes and 1-1/2 hours. Service providers were asked 18 groups

of questions. Several of these were identical to questions asked of students.. Interviews with service providers also lasted between 20 minutes and 1-1/2 hours. A coding manual was used to categorize responses.

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RESULTS AND CONCLUSIONS

Colleges in our sample had the largest proportion of students with disabilities: approximately 3-1/2 % of the student body. Universities, including distance universities, had only approximately 1-1/2 %. The size of the city and the size of the postsecondary educational institution were not related to the proportion of students with disabilities on campus.

The results indicate that about 1/2 of the student sample had 2 or more impairments, suggesting the need for adapted work stations which can accommodate the needs of students with various disabilities. This recommendation is supported by other aspects of the findings which indicate that over 80% of institutions had students who are hard of hearing and use the oral approach, have learning disabilities, are partially sighted, have mobility impairments or use a wheelchair, have medical or psychiatric impairments, or have problems using their arms or hands. Fewer institutions reported students who are deaf and use sign or students who are totally blind.

In spite of their smaller numbers, students who are blind had the largest array of technologies at their disposal. The results indicate that popular solutions, such as software that reads what is on the screen, are used not only by students who are blind, but also by students who have low vision and, increasingly, by students who have a learning disability. Use of large screen monitors is another instance of this trend to "cross-use" technologies.

Voice input software, an increasingly popular option, and scanners are two technological solutions that are used not only by students with learning disabilities, but also by those who have a variety of impairments involving mobility and use of hands and arms. Multiple uses of adaptive technologies seems to be an important trend. Thus, it is becoming increasingly important to ensure that different types of adaptive equipment can work together. In particular, the heavy hardware and training demands of dictation software should be taken into consideration.

Architectural adjustments, such as adjustable work stations, are also simple solutions that go a long way in making computers accessible. Better awareness of what is available for students who are Deaf or hard of hearing is an important issue.

The data indicate that service providers in increasing numbers are using the internet as a means of getting information about what equipment and adaptations are out there for students, and they are primarily teaching themselves how to use the equipment. Students, too, are primarily self-taught, but they generally learn about available hardware and software from their friends or families. Wish lists of both service providers and students include "more and better" of everything as well as easy to use voice control and dictation software.

There is an even split among institutions that keep their adaptive technology in one central location and those that decentralise their equipment. Similarly, about half of all institutions have a loan program, while the rest do not. In general, smaller institutions are less likely to have specialized computer technologies for their students.

A related issue concerns hours of availability, with over 80% of institutions indicating weekend and evening access to adapted equipment mainly through sign-in/sign-out procedures. All institutions studied had access to the internet, but only 1/2 had adapted computers with internet access. All institutions consulted staff and students about equipment purchases, but only about 20% of institutions had broad-based, formal consultative committees.

Internet access and access to the graphical environment of Windows are rapidly becoming a key concern in postsecondary educational institutions. The data also show a trend toward multidisciplinary and multisectorial decision making as well as toward integrated mainstream computer labs. Additionally, there was overall agreement that institutional administrations need to recognize the importance of these technologies for students with disabilities.

The implications of the findings are clear: students with disabilities can and do use computers and information technologies to help them succeed in postsecondary education. Institutions which support students in this effort need to make money available both to individual students as well as to colleges and universities. Moreover, because about 1/2 of the students surveyed did not know that funding programs existed to help them to obtain needed equipment, information concerning the availability of programs needs more broadly based dissemination.

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OTHER PROJECTS OF THE ADAPTECH TEAM

In addition to the research described above, our team is also involved in other activities, including both empirical research and demonstration projects. The ongoing activities of the team are funded by several organizations: the Office of Learning Technologies (OLT), the Social Sciences and Humanities Research Council of Canada (SSHRC), as well as by the Programme d'aide a la recherche sur l'enseignement et l'apprentissage (PAREA). We intend to briefly describe these ongoing activities of our team.

One of our ongoing research projects involves the distribution of an objective questionnaire in January 1999 to 3000 students with disabilities across Canada in both English and French. The questionnaire, which is based on the findings of the interview study descried above, will be distributed in a variety of formats: regular and large print, audiotape, Braille, and disk. The objective of this study is to provide empirical data to better advise students, university service providers, professors, planners, policy makers, as well as developers and suppliers of mainstream and adaptive technologies.

A related project involves an in-depth examination of issues related to the use - and non-use - of new computer and information technologies in the province of Quebec's junior/community college system. What makes this study especially interesting is that a large proportion of Quebec's postsecondary students and service providers speak French, while the minority speak English. This study allows us to explore the unique issues these students and service providers face in relation to computer technologies.

We are also planing another project that again is focused on computer technologies in Quebec's unique junior/community college system. This project is focused on the trend toward integrating technology into the curriculum, and will explore the issues surrounding the impact that this trend is having upon students with disabilities. The goal here is to ensure that courses which have a computer component as

part of the course requirements are fully accessible to students with disabilities. This project is currently awaiting acceptance by the funding agency.

A project of the team that is in the planning stages is the setting up of a Mainstream And Adaptive Computer Technologies Resource And Demo Center. Here the goal is to make computer technologies accessible to people with all types of disabilities by providing an opportunity to try out both mainstream and adaptive hardware and software. This exciting project is being conducted in partnership with the Mckay Centre, a rehabilitation facility based in Montreal, and with manufacturers and distributors of adaptive computer technologies. The ADAPTECH Project maintains an electronic discussion list on the Internet which is moderated by Jennison Asuncion. For more information, send e-mail to <adaptech@concordia.ca>. Additional information about the ADAPTECH Project can be found at http://omega.dawsoncollege.qc.ca/cfichten/adaptech.htm.

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